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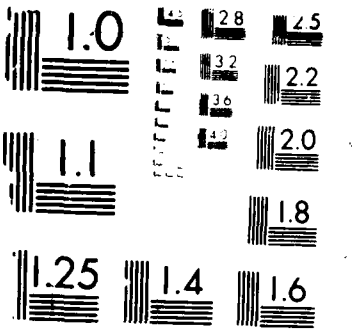
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AFAL TR-87-077

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Final Report
for the period
January 1981 to
September 1987

Combustion Mechanisms

September 1987

Author:
T. Edwards

Approved for Public Release

**Air Force
Astronautics
Laboratory**

Air Force Space Technology Center
Space Division, Air Force Systems Command
Edwards Air Force Base,
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FOREWORD

This is the final report for the Air Force Astronautics Laboratory (AFAL) in-house study Combustion Mechanisms. The project covered a 6.5 year period from January1981 to September 1987. AFAL project managers were David Mann, David P. Weaver, and Tim Edwards.

This technical report has been reviewed and is approved for release and distribution in accordance with the distribution statement on the cover and on the DD Form 1473.

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SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release. Distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) AFAL-TR-87-077	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION Air Force Astronautics Laboratory 6b. OFFICE SYMBOL (If applicable) DYCR	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State and ZIP Code) Edwards AFB, CA 93523-5000	7b. ADDRESS (City, State and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State and ZIP Code)	10. SOURCE OF FUNDING NOS. PROGRAM ELEMENT NO.: 61102F; PROJECT NO.: 2308; TASK NO.: M1; WORK UNIT NO.: UZ
11. TITLE (Include Security Classification) COMBUSTION MECHANISMS (U)	
12. PERSONAL AUTHOR(S) Edwards, Tim	
13a. TYPE OF REPORT Final 13b. TIME COVERED FROM 81/1 TO 87/9	14. DATE OF REPORT (Yr., Mo., Day) 87/9 15. PAGE COUNT 7
16. SUPPLEMENTARY NOTATION	

17. COSATI CODES		
FIELD	GROUP	SUB. GR.
21	08	

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
Solid Propellant Combustion, Combustion Diagnostics, Laser-Induced Fluorescence

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This is the final report of the Combustion Mechanisms project. This project covered a 6.5 year time period. The general goal of this project was to utilize the recently developed laser-based combustion diagnostic probes to learn more about the chemistry and physics occurring in high pressure solid propellant flames. References to published results are included in the report.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS ☐	21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL Tim Edwards	22b. TELEPHONE NUMBER (Include Area Code) (805) 275-5656 22c. OFFICE SYMBOL DYCR

DD FORM 1473, 83 APR EDITION OF 1 JAN 73 IS OBSOLETE.

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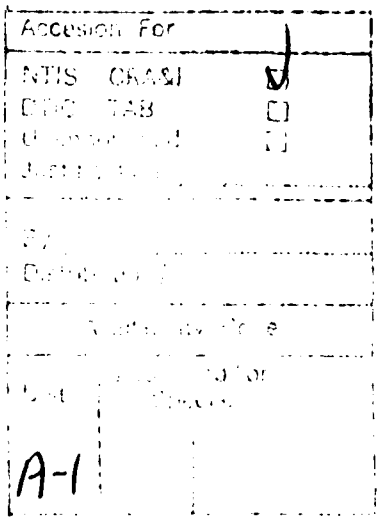

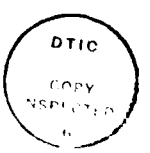

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INTRODUCTION

This is the final report for the AFAL in-house program "Combustion Mechanisms." The general goal of this project was to utilize the recently developed laser-based combustion diagnostic probes to learn more about the chemistry and physics occurring in high pressure solid propellant flames. This involved modeling of the molecular dynamics in flames, experimental studies of chemiluminescence, and laser-induced fluorescence in high pressure solid propellant flames. The project is continuing under the title "High Pressure Combustion Kinetics." A good summary of the progress made in this project can be found in References 7 and 9.

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